

CLAIMS

1. (Original) A hollow auger head assembly for penetrating geological formations, the hollow auger head assembly comprising:

a hollow auger head configured such that it can be secured to a conventional auger used for drilling; and

at least two drill bit assemblies secured to the hollow auger head, each drill bit assembly comprising: a drill bit body having a means of attachment, at least one finger bit secured to the underside of the drill bit body, and at least one blade secured to the front edge of the drill bit body.

2. (Canceled)

3. (Canceled)

4. (Original) The apparatus of Claim 1 wherein the blade is made of hardened material.

5. (Original) The apparatus of Claim 1 wherein the drill bit assemblies have pieces of hardened material secured along the outside edge of the drill bit body.

6. (Canceled)

7. (Canceled)

8. (Original) The apparatus of Claim 1 wherein the drill bit assemblies have pieces of hardened material secured along the front edge of the drill bit body.

9. (Canceled).

10. (Canceled)

11. (Original) The apparatus of Claim 1 wherein each finger bit is positioned on the drill bit body such that the cutting edge is at a negative angle to the front edge of the drill bit body.

12. (Original) The apparatus of Claim 1 wherein the method of securing the drill bit assembly to the hollow auger head comprises a bracket set secured to the outside of the hollow auger head and means for securing the drill bit assembly to the bracket set.

13. (Original) The apparatus of Claim 12 wherein the securing means for securing the drill bit assembly to the brackets comprises a bolt and nut made of a rust-resistant material.

14. (Original) The apparatus of Claim 12 wherein:

the bracket set comprises: a back bracket, a lower bracket having at least one through-material hole, and an upper bracket having at least one through material hole, a protruding finger along the front edge, and a recessed curved slot along the front edge; and

the drill bit assembly has a drill bit body further comprising an inward facing protruding finger and a receptacle in opposite positions from the receptacle and finger on the upper bracket such that they can be interlocked.

15. (Canceled)

16. (Currently Amended) A hollow auger head assembly for penetrating geological formations, the hollow auger head assembly comprising:

a hollow auger head configured such that it can be secured to a conventional auger used for drilling;

at least two means for drilling ~~bit assemblies comprising: a~~, wherein each means for drilling is at least configured to have one or more underside mounted finger bits and one or more front mounted blades ~~bit body having at least one through material hole, at least one finger bit secured to the underside of the drill bit body, each finger bit being positioned on the drill bit body such that the cutting edge is at a negative angle to the front edge of the drill bit body, and at least one blade made of hardened material secured to the front edge of the drill bit body;~~

at least two bracket sets secured to the outside of the hollow auger head equidistant from each other around the circumference of the hollow auger head; and

means for securing the means for drilling ~~bit assembly~~ to the bracket set.

17. (Currently Amended) The apparatus of Claim 16 wherein the means ~~securing method~~ for securing the means for drilling ~~bit assembly~~ to the brackets comprises a bolt and nut made of a rust-resistant material.

18. (Currently Amended) The apparatus of Claim 16 further comprising:

a bracket set comprising a back bracket, a lower bracket having at least one through-material hole, and an upper bracket having at least one through material hole, a protruding finger along the front edge, and a recessed curved slot along the front edge; and

[[a]]each means for drilling further comprising a drill bit body having an inward facing protruding finger and a receptacle in opposite positions from the receptacle and finger on the upper bracket such that they can be interlocked.

19. (Canceled)

20. (Canceled)

21. (Canceled)

22. (Currently Amended) The apparatus of Claim 16 wherein the means for drilling bit assemblies have additional pieces of hardened material secured along [[the]] an outside edge of ~~the drill bit body~~.

23. (Canceled)

24. (Canceled)

25. (Currently Amended) The apparatus of Claim ~~16~~17 wherein the means for drilling bit assemblies have additional pieces of hardened material secured along the front edge of the drill bit body.

26. (Canceled)

27. (Canceled).

28. (Original) A method of penetrating geological materials using a hollow auger head assembly comprising the steps of

attaching the hollow auger head assembly to an auger of a drilling rig, the hollow auger head assembly comprising a standard-size hollow auger head to which at least two bracket sets have been secured and a drill bit assembly attached to each bracket set, the drill bit assembly comprising a drill bit body to the underside of which at least one finger bit has been attached and to the front of which a blade of hardened material has been attached;

inserting the drilling rig and attached hollow auger head assembly into the geological formation;

rotating the drilling rig and attached hollow auger head assembly in the geological formation;

inserting the drilling rig and attached hollow auger head assembly into the geological formation;

rotating the drilling rig and attached hollow auger head assembly in the geological formation;

breaking up the geological formation with the hollow auger head assembly;

feeding the broken up geological formation from the finger bit on the first drill bit assembly to the blade of the second drill bit assembly on the on the hollow auger head;

further breaking up the geological formation with the blade of the second drill bit assembly; and

moving the broken-up geological formation up over the top of the second drill bit assembly on the hollow auger head assembly, up the auger and away from the drilling area.

29. (New) An apparatus for penetrating geological materials using a hollow auger head assembly comprising:

means for attaching the hollow auger head assembly to an auger of a drilling rig, the hollow auger head assembly comprising a standard-size hollow auger head to which at least two bracket sets have been secured and a drill bit assembly attached to each bracket set, the drill bit assembly comprising a drill bit body to the underside of which at least one finger bit has been attached and to the front of which a blade of hardened material has been attached;

means for inserting the drilling rig and attached hollow auger head assembly into the geological formation;

means for rotating the drilling rig and attached hollow auger head assembly in the geological formation;

means for breaking up the geological formation with the hollow auger head assembly;

means for feeding the broken up geological formation from the finger bit on the first drill bit assembly to the blade of the second drill bit assembly on the on the hollow auger head;

means for further breaking up the geological formation with the blade of the second drill bit assembly; and

means for moving the broken-up geological formation up over the top of the second drill bit assembly on the hollow auger head assembly, up the auger and away from the drilling area.